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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER	
			MONDT, JOHANNES P	
ART UNIT		PAPER NUMBER		
3663				
NOTIFICATION DATE		DELIVERY MODE		
07/19/2007		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/733,282

Applicant(s)

LE TOURNEUR, PHILIPPE

Examiner

Johannes P. Mondt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-13, 16 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) 3, 4, 6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5, 8, 10-13, 16 and 18-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Amendment filed 4/5/07 forms the basis for this Amendment. In said Amendment applicant substantially amended all pending elected claims 1-2, 5, 10-13, 16 and 18-21.

Comments on Remarks submitted with said Amendment are included below under "Response to Arguments".

Drawings

1. Replacement sheets for Figures 1A and 1B are not approved, and are objected to: they should be designated by a legend such as --**Prior Art**-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

It is noted that "Background Art" and "Prior Art" are not identical in meaning, "Background" possibly including art known to applicant, although no rejection could be made.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. ***Claims 1, 2 and 5*** are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al (JP 63-037621).

Yamada et al teach a target comprising:

neutron emissive parts 5 (boron nitride hydride) and neutron non-emissive parts 4 (gold) (see English abstract, "Purpose", lines 1-4; and "Constitution", lines 6-10) which are juxtaposed, only the neutron emissive parts emitting neutrons during bombardment with particles (inherently so, through the hydrides: see admission by applicant in the specification in this regard), said emissive and non-emissive parts being arranged so as to form a non-uniform pattern as a coded mask (as they form a coded mask (see English abstract, "Purpose", lines 1-4 and title).

When bombarded with particles capable of causing fusion reactions in hydrogen isotopes said target necessarily emits neutrons, yielding a neutron flow including plural neutron beams coded by the pattern of the mask (each beam caused by an area of hydride). However, applicant is reminded that the limitations "intended to emit neutrons when bombarded with particles" (lines 1-2) and "such that said target emits a neutron flow including plural neutron beams coded by the pattern of the mask" limit intended use

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only, and have zero patentable weight for the claimed target. Intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

On claim 2: the emissive parts are formed from at least one metal hydride, namely a hydride of the metal boron (N.B.: see Merriam-Webster's Collegiate Dictionary on boron; page 133), the metal of the metal hydride being located on a support in non-hydrogen fixing material (gold). Whether or not said metal hydride was deposited through a stencil is of zero patentable weight for the claimed target, being merely a product-by-process limitation. The limitation is only of patentable weight in as much as the method steps distinguish the final structure, and to the extent not impacting final structure are taken to be product-by-process limitations and non-limiting.

A product by process limitation is directed to the product per se, no matter how they are actually made. See In re Fessman, 180 USPQ 324, 326 (CCPA 1974); In re Marosi et al, 218 USPQ 289, 292 (Fed. Cir. 1983), and In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make clear that it is the patentability of the final structure of the product "gleaned" from the process steps that must be determined in a "product-by-process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

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On claim 5: the non-hydrogen fixing material of the support is chosen from among copper, silver or gold, said metals being used alone or in combination: namely: gold (see English abstract, "Purpose").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. ***Claim 8*** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al as applied to claim 1, in view of Armistead (5,838,759).

As detailed above, Yamada et al anticipate claim 1. Yamada et al do not necessarily teach the further limitation defined by claim 8. However, it would have been obvious to include said further limitation in view of Armistead, who, in a patent on an x-ray imaging system (see title and abstract, as well as "Field of the Invention"), hence analogous art, teaches the selection of a particle accelerator 14 as X-ray source (col. 2, l. 41-47).

Motivation to include the teaching by Armistead in the invention by Yamada et al derives from the teaching by Armistead of the relatively inexpensive and compact (hence easily transportable) nature of the linear accelerator 14 (loc.cit.).

3. ***Claims 10, 12-13, 16, 18, 20 and 21*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al and Armistead as applied to claim 8 above, and further in view of Cluzeau (FR 2 738 669) (as previously cited).

As detailed above, claim 8 is unpatentable over Yamada et al in view of Armistead. Neither necessarily teach the further limitation defined by claim 10, although Armistead does teach the inclusion of a converter plate 22 in the X-ray pathway for the generation of fast neutrons (see col. 5, l. 45-59). However, it would have been obvious to include said further limitation in view of Cluzeau, who, in a patent on a detection system using fast neutrons, hence analogous to Armistead, teaches that the particle accelerator is equipped with an alpha particle detector 15, 35 associated with the emission of neutrons (see abstract). Motivation to include the teaching by Cluzeau in this regard in the invention by Yamada et al and Armistead derives from the possibility to verify nuclear fusion reactions, hence the presence of deuterium or tritium, caused by any of the primary neutrons.

On claims 12-13: the target in Cluzeau is inclined in relation to the direction of the particles bombarding it (see abstract and Figures 1 and 2). So it is in Armistead (target 12, beam 15, see col. 4, l. 15+ and Figures 1-2). Such inclination is at least obvious as a mode of operation that enlarges the degrees of freedom of positioning accelerator, target and detectors. Motivation derives from said degrees of freedom. The alternative of parallel target and alpha detector (as recited in claim 13) equally is motivated by said enlargement of the degrees of freedom.

On claim 16: although Armistead includes the teaching of a neutron generating means in the form of converter plate 22 rather than a neutron generating tube, the device by Cluzeau contains a neutron generating tube 21 comprising a target and is equipped with a particle detector 15/35 associated with the emission of neutrons (the

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alpha particles and neutrons are emitted in exactly opposite directions and through the same nuclear reaction ${}^3\text{H}(\text{d},\text{n}){}^4\text{He}$ (page 2) by conservation of linear momentum). It would have been obvious to include the teaching by Cluzeau on neutron generating tube, motivated by the creation thereby of the possibility of independent energy ranges of X-ray and neutron interrogating mean, thus increasing the degrees of freedom of the interrogation process.

On claim 18: as explained above, Cluzeau also teaches the neutron generating tube to be equipped with an alpha particle detector associated with the emission of neutrons. As explained above, *motivation* derives from the possibility to identify and both localize and time nuclear fusion events. See Cluzeau as cited to date.

On claims 20-21: the target in Cluzeau is inclined in relation to the direction of the particles bombarding it (see abstract and Figures 1 and 2). So it is in Armistead (target 12, beam 15, see col. 4, l. 15+ and Figures 1-2). Such inclination is at least obvious as a mode of operation that enlarges the degrees of freedom of positioning accelerator, target and detectors. Motivation derives from said degrees of freedom. The alternative of parallel target and alpha detector (as recited in claim 13) equally is motivated by said enlargement of the degrees of freedom.

4. **Claims 11 and 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al, Armistead and Cluzeau as applied to claim 10 above, and further in view of Kassing (DE 3049153 A1) (previously cited).

As detailed above, claims 10 and 18 are unpatentable over Yamada et al, Armistead and Cluzeau, none of whom necessarily teach the further limitation defined by claim 11 nor the further limitation defined by claim 19. However, it would have been obvious to include said further limitation in view of Kassing, who, in a patent on alpha particle detectors, hence in this regard analogous to Cluzeau, teach the alpha particle detector to be a semiconductor storage matrix (claim 1 in Kassing) (see also Derwent translation of abstract and equivalent abstract included herewith) connected to an electrical circuit. The pixels by definition are the units of electrical response to the detected alpha particles. Motivation to include the teaching by Kassing derives from the efficient spatial resolution obtained in the semiconductor alpha particle detector.

Response to Arguments

Applicant's arguments filed 4/5/07 have been fully considered but they are not persuasive. All claims have been substantially amended, as detailed above. The instant claims have been examined at the earliest time possible. Applicant's traverse of the art rejection over Cluzeau is hereby rendered moot as the pertinent portion of the newly amended independent claim no longer relies on Cluzeau. Attention is drawn to the fact that the so-called "X-ray mask" of Yamada et al meet all the structural and material limitations of applicant's target, and to the limitations of intended use without patentable weight present in said independent claim, with reference to the case law cited in the rejection overleaf. However, examiner agrees with the traverse of the objection to the Drawing, Figure 8c.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P. Mondt whose telephone number is 571-272-1919. The examiner can normally be reached on 8:00 - 18:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JPM
July 9, 2007

Primary Patent Examiner:


Johannes Mondt (TC 3600, Art Unit: 3663)